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EXAMINER

METZMAIER, DANIEL S

ART UNIT

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

DETAILED ACTION

Claims 11-15 are pending.

Claim Interpretation

1. Claims 11-14 are directed to methods of making polishing abrasive particle compositions comprising cocoon-shaped colloidal silica. Claim 15 is directed to compositions are drafted in product-by-process format, made by said methods. Attention is directed to MPEP § 2113 regarding the analysis of said product-by-process claim form regarding patentability.

Claims 11-14 are directed to processes for the manufacturing colloidal silica.

The colloidal silica in all the claims has been characterized as “having a cocoon shape”. Applicants do not specifically define the meaning of the phrase “having a cocoon shape”. Therefore, the phrase takes the plain meaning in the art. Examples of silica materials are listed including silica having use, “ . . . in precision polishing of such electronic materials, Japanese Laid-open Patent Application Publication No. H7-221059 teaches a colloidal silica with a ratio of minor to major axis of 0.3 to 0.8 and a major axis of 7 to 1,000 nm.” See Specification at page 3, paragraph beginning at line 11.

Another example is, “ . . . described in Japanese Patent No. 3195569 that a cocoon-shaped colloidal silica is produced which has a minor axis of 10 to 200 nm and with a major/minor axis ratio of 1.4 - 2.2 . . .”. See Specification at paragraph bridging pages 3 and 4.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claim 15 is rejected under 35 U.S.C. 102(e) as being anticipated by Nakayama et al, US 6,652,612. See comparative example 3 and column 4, line 32, to column 6, line 6; particularly column 5, lines 64 et seq; and claims. The claims are drafted in product-by-process format and have not been shown to patentably distinguish over the prior art compositions for the breadth of claim 15. Attention is directed to MPEP § 2113.

4. Claim 15 is rejected under 35 U.S.C. 102(a) as being anticipated by Nakayama et al, US 2003/0089045. See comparative example 3 and paragraph [0026]-[0040], particularly paragraph [0040]; and claims. The claims are drafted in product-by-process format and have not been shown to patentably distinguish over the prior art compositions for the breadth of claims 2-6. Attention is directed to MPEP § 2113.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1796

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 11 and 14-15 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Iso Mamoru, JP 11-060232, as evidenced by the machine translation of JP 11-060232. Iso Mamoru (abstract) discloses silica made by a different method than applicants.

Iso Mamoru JP '232 (examples) disclose the combination of methyl silicic acid and methanol as a raw material. Said characterization suggests the presence of an acid in the methyl silicic acid material. Said oligomer condensation would have been inherent thereto.

The use of alkoxysilane condensate rather than an alkoxysilane has not been shown to impart patentable distinction to the silica particles, which are otherwise disclosed as having a cocoon shape (paragraph [0001]).

To the extent the Iso Mamoru differs from the claims in the oligomer formation step and/or the average degree of condensation, some variation in the properties of the materials would have been obvious for the advantages of employing the materials in the same utilities as polishing materials. To the extent the methods would impart a difference to the materials, said difference has not been shown to be a patentable difference.

The claims are drafted in product-by-process format and have not been shown to patentably distinguish over the prior art compositions for the breadth of claim 15.

Art Unit: 1796

7. Claims 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iso Mamoru, JP 11-060232, as evidenced by the machine translation of JP 11-060232, as applied to claims 15 above, and further in view of So et al, US 6,432,151 and Robey, US 2,524,358.

Iso Mamoru (abstract) discloses silica made by a different method than applicants. The use of alkoxysilane condensate rather than an alkoxysilane has not been shown to impart patentable distinction to the silica particles, which are otherwise disclosed as having a cocoon shape (paragraph [0001]).

To the extent Iso Mamoru differs from the claims in the explicit recitation of the average degree of condensation, said difference has not been shown to be an unobvious difference. It has long been known to form colloidal silica by employing alkoxysilane condensate, as is clearly shown in the Robey reference in a one-step process as a functional equivalent. It would have been obvious to one of ordinary skill in the art at the time of applicants' invention to employ alkoxysilane condensate shown to be well known in the colloidal silica art for the advantage of reduced hydrolysis time and reduced floc/precipitate formation.

To the extent Iso Mamoru differs from the method claims in the further hydrothermal treatment of the polishing materials, said treatment has not been shown to be an unobvious treatment and/or other than conventional in making said silica abrasives for use as polishing media.

So et al (abstract, column 4 et seq, and examples) discloses silica slurries and methods of making said slurries for wafer polishing. So et al discloses (column 8, lines

Art Unit: 1796

60 et seq) the hydrothermal treatment of silica polishing agents 1 to 2 hours in an autoclave to make said silica physically solid and advantageously improve their physical strength and polishing efficacy.

These references are combinable because they teach silica polishing agents and methods of making said polishing agents from alkoxysilanes. It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to alkoxysilane condensate, as functional equivalent of the silica source materials followed by hydrothermal treatment of the silica polishing materials for the advantage of making them physically solid and improving their polishing efficacy. The particular temperature and pressures would have been within the level of one having ordinary skill in the art as a result effective variable.

8. Claim 15 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Rodel Nitta Corporation, EP 1 174 483 A1. Rodel Nitta Corporation (abstract, paragraph [0007] et seq, paragraph [0012] et seq, examples and claims) discloses cocoon-shaped silica polishing compositions.

Rodel Nitta Corporation makes the compositions different than the instantly claimed compositions without the hydrothermal treatment of said compositions. Since said materials are the same and the method of making the compositions are similar, the properties of the compositions recited in the claims would have been expected to have been the same or substantially the same. A compound or composition and all of its

Art Unit: 1796

properties are generally inseparable. *In re Papsech*, 315 F2d. 381, 137 USPQ 43, (CCPA 1963).

To the extent the Rodel Nitta Corporation differs from the claims in the average degree of condensation, some variation in the properties of the materials would have been obvious for the advantages of employing the materials in the same utilities as polishing materials. To the extent the methods would impart a difference to the materials, said difference has not been shown to be a patentable difference.

The claims are drafted in product-by-process format and have not been shown to patentably distinguish over the prior art compositions for the breadth of claim 15.

9. Claims 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rodel Nitta Corporation, EP 1 174 483 A1, as applied to claim 15 above, and further in view of So et al, US 6,432,151 and Robey, US 2,524,358.

Rodel Nitta Corporation (abstract, paragraph [0007] et seq, paragraph [0012] et seq, examples and claims) discloses cocoon-shaped silica polishing compositions.

To the extent Rodel Nitta Corporation differs from the claims in the explicit recitation of the average degree of condensation, said difference has not been shown to be an unobvious difference. It has long been known to form colloidal silica by employing alkoxysilane condensate, as is clearly shown in the Robey reference in a one-step process as a functional equivalent. It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to employ alkoxysilane condensate shown to be well known in the colloidal silica art for the advantage of reduced hydrolysis time and reduced floc/precipitate formation.

To the extent Rodel Nitta Corporation differs from the method claims in the further hydrothermal treatment of the polishing materials, said treatment has not been shown to be an unobvious treatment and/or other than conventional in making said silica abrasives for use as polishing media.

So et al (abstract, column 4 et seq, and examples) discloses silica slurries and methods of making said slurries for wafer polishing. So et al discloses (column 8, lines 60 et seq) the hydrothermal treatment of silica polishing agents 1 to 2 hours in an autoclave to make said silica physically solid and advantageously improve their physical strength and polishing efficacy.

These references are combinable because they teach silica polishing agents and methods of making said polishing agents from alkoxysilanes. It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to alkoxysilane condensate, as functional equivalent of the silica source materials followed by hydrothermal treatment of the silica polishing materials for the advantage of making them physically solid and improving their polishing efficacy. The particular temperature and pressures would have been within the level of one having ordinary skill in the art as a result effective variable.

Response to Arguments

10. Applicant's arguments filed 26 April 2010 have been fully considered but they are not persuasive.

11. Applicants assert the rejections are moot since the rejected claims have been cancelled and replaced by claims 11-15.

Art Unit: 1796

12. Applicants (page 3) reference to the “intended use” limitation, *i.e.*, “for use in the final stage of a fine polishing process”, does not specifically define what is being polished, *e.g.*, silicon wafer or stone counter top. It is thus concluded that applicants' interpretation of said limitation would exclude So et al is not deemed persuasive.

13. Applicants (pages 4 and 5) assert the references disclose raw materials comprising alkoxysilanes rather than the claimed alkoxysilane condensates now required in a separate condensation step. This has not been deemed persuasive because (regarding the compositions) the silica source materials have not been shown to impart a different to the claimed colloidal silica. The process of Iso Mamoru JP '232 discloses the addition of a methyl silicic acid in methanol to an ammonia solution. The condensation would have been expected to have been implicit to the Iso Mamoru JP '232 process since the hydrolysis is characterized as an acid and some condensation to oligomers greater than 1, *e.g.*, 2-8, would have been expected.

14. Applicants (pages 5-8) characterization that the step of oligomer condensation is distinct from the references, applicants' claims do not distinguish the claims for the simultaneous hydrolysis and condensation of the materials in the process.

15. Applicant's remaining arguments with respect to claims 11-15 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

Art Unit: 1796

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

17. Monroe, US 5,728,184, was cited of interest to the instant claims in the last Office Action. Monroe discloses hydrothermal treatment of abrasive particle dispersions (at least column 9, lines 37-49) at temperatures of 150 to 200° C and elevated pressures.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel S. Metzmaier whose telephone number is (571) 272-1089. The examiner can normally be reached on 9:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David W. Wu can be reached on (571) 272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1796

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

**/Daniel S. Metzmaier/
Primary Examiner, Art Unit 1796**

DSM